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ABSTRACT

The information contained in this booklet has been compiled as a convenient reference about activities of the National Science Foundation. In addition to activities data, tables are included that present pertinent information on the national status of research and education in the sciences. Fiscal data pertaining to NSF programs reflect obligations as reported at the end of each fiscal year. (Author/HS)

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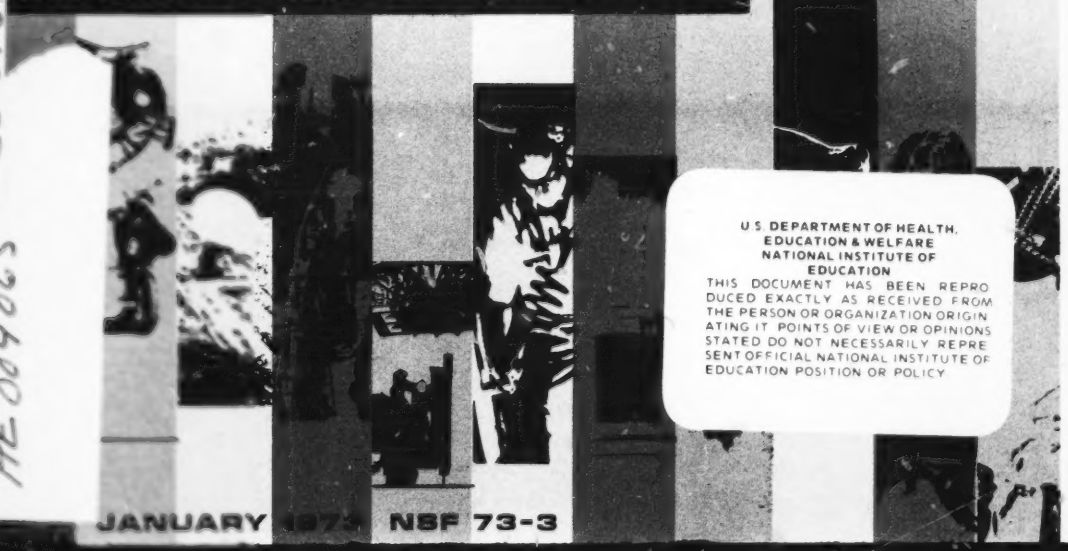
DATABOOK

NATIONAL SCIENCE FOUNDATION



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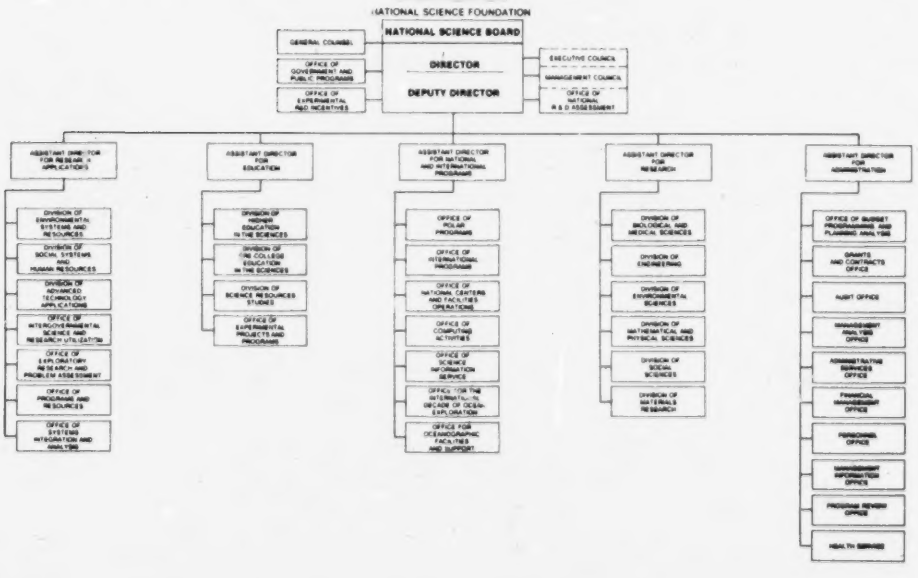
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DATABOOK

NATIONAL SCIENCE FOUNDATION

JANUARY 1973

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INTRODUCTION

The information contained in this booklet has been compiled as a convenient reference for members of the National Science Board and the staff of the National Science Foundation. In addition to data on activities of the Foundation, a number of tables have been included to present pertinent information on the national status of research and education in the sciences. Unless otherwise indicated, data are prepared by NSF sources. Fiscal data pertaining to NSF programs reflect obligations as reported at the end of each fiscal year.

NATIONAL SCIENCE FOUNDATION—**GENERAL**

Table 1 **LEGISLATIVE AND EXECUTIVE ACTION HIGHLIGHTS**

Act or Executive Document	Content
The National Science Foundation Act of 1950, as amended through December 1, 1972, 42 U.S. Code 1861-1875	The NSF Act states that the Foundation is established "To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes." Its general functions are to: 1. Initiate and support basic scientific research and programs to strengthen scientific research potential and science education programs at all levels; and to appraise the impact of research upon industrial development and the general welfare. 2. Award scholarships and graduate fellowships in the sciences. 3. Foster the interchange of scientific information among scientists in the United States and foreign countries. 4. Foster and support the development and use of computer and other scientif-

Table 1—Continued

ic methods and technologies, primarily for research and education in the sciences. 5. Evaluate the status and needs of the various sciences and take into consideration the results of this evaluation in correlating its research and educational programs with other Federal and non-Federal programs. 6. Maintain a current register of scientific and technical personnel, and in other ways provide a central clearinghouse for the collection, interpretation, and analysis of data on scientific and technical resources in the United States. 7. Determine the total amount of Federal money received by universities, and appropriate nonprofit organizations for the conduct of scientific research, including both basic and applied but excluding development, and report annually thereon to the President and the Congress. 8. Initiate and support specific scientific activities in connection with matters relating to international cooperation, national security, and the effects of scientific applications upon society. 9. Initiate and support scientific research, including applied research, at academic and other nonprofit institutions and, at the direction of the President, support special applied research at other organizations. 10. Recommend and encourage the pursuit of national policies for the promotion of basic research and education in the sciences.

Table 1 –Continued

Act or Executive Document	Content
Executive Order 10900, 3 CFR 1959 Supp. p. 429	Executive Order 10900 authorized the Foundation to use surplus foreign currencies to collect, collate, translate, abstract and disseminate scientific and technological information under Public Law 83-480, as amended, commonly referred to as "PL 480" (7 USC 1704(b)(3). This legislation authorized the Librarian of Congress to consult with the Foundation concerning foreign books and informational materials (7 USC 1704(b)(5).
Public Law 85-864, 42 U.S. Code 1876-1879	Title IX of Public Law 85-864 directed the National Science Foundation to establish a Science Information Service, and through such service to (a) provide or arrange for the provision of indexing, abstracting, translating and other services leading to a more effective dissemination of scientific information, and

Table 1 –Continued

Act or Executive Document	Content
Public Law 85-864, 42 U.S. Code 1876-1879	(b) undertake programs to develop new or improved methods, including mechanized systems, for making scientific information available.
Executive Order 10521, 3 CFR 1954 Supp. p. 183 as amended by Executive Order 10807, 3 CFR 1959 Supp. p. 329	Executive Order 10521 and Executive Order 10807 defined Foundation responsibility for reviewing the basic scientific research programs and activities of the Federal Government and assigned the Foundation additional responsibility in providing leadership in the effective coordination of the scientific information activities of the Federal Government.
Bureau of the Budget Circular No. A-51	Provided that the Foundation will exercise the principal coordinating and management role in the development and carrying out of an integrated U.S. scientific program for Antarctica.

Table 1–Continued

	Content
Letter dated November 7, 1969, from the Vice President of the United States to the Director of the National Science Foundation	Designated the Foundation as lead agency for Arctic research and the International Decade of Ocean Exploration.
Public Law 92-372 (NSF Authorization Act of 1973)	Authorizes appropriations up to $7,000,000 in excess foreign currencies in addition to regular fiscal year 1973 authorizations. These amounts are to be expended for needs of the Foundation outside the United States and have been used for collecting, translating, abstracting and disseminating scientific information, foreign scientific and technological information, and for support of research and other scientific purposes.

NOTES

Table 2

NATIONAL SCIENCE BOARD
Membership and
Terms of Appointment

Terms Expire May 10, 1974

R. H. Bing, Rudolph E. Langer Professor of Mathematics, University of Wisconsin, Madison, Wis.

Harvey Brooks, Gordon McKay Professor of Applied Physics, and Dean of Engineering and Applied Physics, Harvard University, Cambridge, Mass.

William A. Fowler, Institute Professor of Physics, California Institute of Technology, Pasadena, Calif.

Norman Hackerman, President, William Marsh Rice University, Houston, Tex.

Philip Handler, President, National Academy of Sciences, Washington, D. C.

James G. March, David Jacks Professor of Higher Education, Political Science, and Sociology, School of Education, Stanford University, Stanford, Calif.

Grover E. Murray, President, Texas Tech University, Lubbock, Tex.

Frederick E. Smith, Professor of Advanced Environmental Studies in Resources and Ecology, Graduate School of Design, Harvard University, Cambridge, Mass.

Terms Expire May 10, 1976

*H. E. Carter (Chairman, National Science Board), Coordinator of Interdisciplinary Programs, University of Arizona, Tucson, Ariz.

Robert A. Charpie, President, Cabot Corp., Boston, Mass.

Lloyd M. Cooke, Director of Urban Affairs, Union Carbide Corp., New York, N. Y.

*Robert H. Dicke, Cyrus Fogg Brackett Professor of Physics, Department of Physics, Princeton University, Princeton, N. J.

David M. Gates, Professor of Botany and Director, Biological Station, Department of Botany, University of Michigan, Ann Arbor, Mich.

*Roger W. Heyns (Vice Chairman, National Science Board), President, American Council on Education, Washington, D. C.

Frank Press, Chairman, Department of Earth and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, Mass.

*F. P. Thieme, President, University of Colorado, Boulder, Colo.

Terms Expire May 10, 1978

W. Glenn Campbell, Director, Hoover Institute on War, Revolution, and Peace, Stanford University, Stanford, Calif.

T. Marshall Hahn, Jr., President, Virginia Polytechnic Institute and State University, Blacksburg, Va.

Anna J. Harrison, Professor of Chemistry, Mount Holyoke College, South Hadley, Mass.

Hubert Heffner, Chairman, Department of Applied Physics, Stanford University, Stanford, Calif.

William H. Meckling, Dean, The Graduate School of Management, The University of Rochester, Rochester, N. Y.

William A. Nierenberg, Director, Scripps Institution of Oceanography, University of California, San Diego, Calif.

Russell D. O'Neal, President, Aerospace-Electronics Group, The Bendix Corp., Southfield, Mich.

Joseph M. Reynolds, Boyd Professor of Physics and Vice President for Instruction and Research, Louisiana State University, Baton Rouge, La.

Member Ex Officio

*H. Guyford Stever, Director, National Science Foundation, Washington, D. C. (Chairman, Executive Committee)

* * *

Vernice Anderson, Executive Secretary, National Science Board, National Science Foundation, Washington, D. C.

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*Member, Executive Committee.

Table 3 SENIOR STAFF OF THE NATIONAL SCIENCE FOUNDATION

Director, H. Guyford Stever

Deputy Director, Raymond L. Bisplinghoff

Government and Public Programs
Director, C.C. Ohlke

General Counsel, William G. Hoff

Assistant Director for Administration	Assistant Director for Education (Acting)	Assistant Director for National and International Programs	Assistant Director for Research	Assistant Director for Research Applications
T.E. Jenkins	Keith R. Kelson	Thomas B. Owen	Edward C. Creutz	Alfred J. Eggers
Deputy Assistant Director (Acting)	Deputy Assistant Director (Acting)	Deputy Assistant Director	Deputy Assistant Director	Deputy Assistant Director
Wilbur W. Bolton	Lyle W. Phillips	T.O. Jones	Edward P. Todd	Sidney Sternberg

Table 4 **NATIONAL SCIENCE FOUNDATION EMPLOYMENT BY PROGRAM**

Fiscal Years 1968-1972

Division or Office	1968	1969	1970	1971	1972
Research	230	229	198	201	227
Education	245	219	213	183	167
National and International Programs	88	89	142	142	165
Institutional Programs	59	56	53	19	[1]
Administration	284	306	307	335	349
Research Applications	–	–	–	54	73
Others	47	44	57	71	74
TOTAL	**953**	**943**	**970**	**1,005**	**1,055**

NOTE: Excludes full-time employees reimbursable from State Department (AID).

[1] Institutional Relations Directorate disestablished as of January 28, 1972.

NATIONAL SCIENCE FOUNDATION—**BUDGET AND FISCAL DATA**

Budget and fiscal data are expressed in terms of net obligations and do not in all cases coincide with figures for grants and contracts reported by program administrators due to recoveries, reimbursements, etc.

Table 5 **CONGRESSIONAL APPROPRIATIONS FOR THE NATIONAL SCIENCE FOUNDATION**

Fiscal Years 1952-1973
(Thousands of dollars)

Fiscal Year	Appropriation	Fiscal Year	Appropriation
1952	$ 3,500	1962	$283,250
1953	4,750	1963	322,500
1954	8,000	1964	383,200
1955	14,250[1]	1965	420,400
1956	53,000[2]	1966	479,999
1957	40,000	1967	479,080
1958	61,750[3]	1968	486,000
1959	136,500[4]	1969	400,000
1960	152,773	1970	440,000[5]
1961	175,800	1971	513,000[6]
		1972	622,000[7]
		1973	646,740[8]

[1] Includes $2.0 million supplemental for the International Geophysical Year Program (IGY).
[2] Includes $37.0 million supplemental for the IGY.
[3] Includes $8.75 million and $1.0 million supplementals and an additional $2.0 million for IGY.
[4] Includes $4.0 million supplemental and $7.5 million for IGY.
[5] Includes $2.0 million for Special Foreign Currency.
[6] Includes $2.0 million for Special Foreign Currency.
[7] Includes $3.0 million for Special Foreign Currency.
[8] Includes $7.0 million for Special Foreign Currency and $19.7 million for aircraft expenses for the U. S. Antarctic Research Program.

Table 6 NATIONAL SCIENCE FOUNDATION OBLIGATIONS BY PROGRAM AREA

Fiscal Years 1963-1973
(Millions of Dollars)

Program	1963	1964	1965	1966	1967	1968	1969	1970	1971	Actual 1972	Est. 1973
Scientific Research Project Support	$107	$112	$119	$157	$168	$171	$176	$162	$175	$243	$261
Specialized Research Facilities and Equipment	19	15	23	19	17	19	7	7	6	[6]	[7]
National and Special Research Programs	18	25	42	38	17	15	13	39	50	86	123[10]
National Research Centers	14	19	19	23	24	31	29	27[4]	37[4]	40[4]	41
National Sea Grant Program	-	-	-	-	-	5	6	9	6	[6]	-
Computing Activities in Education and Research	5	5	5	9	13	22	17	17	15	21	12[8]
Science Information Activities	9	10	11	11	10	14	11	11	11	10	10
International Cooperative Scientific Activities	1	1	1	2	2	2	2	2	2	4	5
Research Applied to National Needs	-	-	-	-	-	-	-	-	34[5]	54	70
Intergovernmental Science Program	-	-	-	-	-	-	-	[1]	1	1	1
Institutional Support for Science	37	41	60	70	60	62	38	46	34	21	18
Science Education Support[9]	99	111	139	134	123	125	115	120	99	66	78
Graduate Student Support[7]	-	-	-	-	-	-	-	-	-	20	20
Planning and Policy Studies	2	2	2	2	2	2	2	2	3	3	2
Program Development and Management	11	12	13	13	14	16	17	20	22	24	29
TOTAL	$321	$354	$418	$468	$485	$506[2]	$433[2]	$461[3]	$498[3]	$598[3]	$670[3]

[1] Less than $500,000.
[2] Includes Mohole Project recoveries.
[3] Does not include Special Foreign Currency Program.
[4] Includes reimbursables less than $300,000.
[5] Established March 1971. Includes research efforts such as Weather Modification, Earthquake Engineering, and Interdisciplinary Research Relevant to Problems of Our Society (IRRPOS), all formerly under National and Special Research Programs and a number of activities formerly included in the Scientific Research Project Support Program.
[6] Program transferred to the National Oceanic and Atmospheric Administration, Department of Commerce on Oct. 2, 1970.
[7] Combined with Scientific Research Project Support Program.
[8] Computing Activities in Education combined with Science Education Support program.
[9] This program was combined with Science Education Support program until 1972.
[10] Includes Supplemental Appropriations of $19,700,000 for aircraft expenses for the U. S. Antarctic Program.

NATIONAL SCIENCE FOUNDATION—**GRANTS AND AWARDS**

Amounts reported for grants and awards differ in some cases from budget and fiscal data which are expressed as net obligations.

The **number of grants and contracts awarded** is determined by counting each NSF obligation of funds as an "award" regardless of whether the "award" is a new award, an amendment, a supplement, or an extension.

Table 7 **SUMMARY OF NATIONAL SCIENCE FOUNDATION OBLIGATIONS AND AWARDS BY PROGRAM**

Fiscal Year 1972
(Thousands of Dollars)

Program	Number of Awards	Total Amount Proposed for Awards	Total Amount Obligated
Scientific Research Project Support	5,658	$ 557,915	$242,762
Specialized Research Facilities and Equipment	142	23,104	6,012
National and Special Research Programs	452	134,718	85,886
National Research Centers	29	42,709	39,735
Computing Activities in Education and Research	155	51,955	20,916
Science Information Activities	87	11,440	9,711
International Cooperative Scientific Activities	590	5,077	4,245
Intergovernmental Science Program	43	1,542	1,078
Research Applied to National Needs	341	115,487	53,767

Table 7–Continued

Program	Number of Awards	Total Amount Proposed for Awards	Total Amount Obligated
Institutional Support for Science	638	27,690	20,961
Science Education Support	2,046	99,779	65,016
Graduate Student Support	1,774	20,602	20,339
Planning and Policy Studies	54	5,902	2,930
TOTAL–ALL PROGRAMS	**12,009**	**1,098,020**	**573,158**
Program Development & Management	—	—	24,562
TOTAL–NSF	**12,009**	**$1,098,020**	**$597,720**[1]

[1] Does not include Special Foreign Currency.

Table 8 **SUMMARY OF NATIONAL SCIENCE FOUNDATION OBLIGATIONS AND AWARDS IN SUPPORT OF SCIENTIFIC RESEARCH PROJECTS BY DISCIPLINE**

Fiscal Year 1972
(Thousands of dollars)

Program	Number of awards	Total amount proposed for awards	Total amount obligated
TOTAL	**5,958**	**$567,915**	**$242,662**
Physics	267	64,014	32,328
Chemistry	593	65,824	22,849
Astronomy	131	17,341	7,765
Mathematics	693	49,690	13,746
Biological Sciences	1,620	152,749	52,787
Atmospheric Sciences	211	24,046	11,419
Earth Sciences	253	16,565	9,383
Oceanography	368	25,808	12,460
Engineering	634	45,090	24,383
Social Sciences	613	48,214	22,068
Materials Research	375	49,574	33,394

Table 9 SCIENTIFIC RESEARCH PROJECTS
AVERAGE DISTRIBUTION OF FUNDS BY TYPE OF EXPENDITURE
Fiscal Years 1970-1972

	Fiscal Year 1970		Fiscal Year 1971		Fiscal Year 1972	
	Amount	Percent of total	Amount	Percent of total	Amount	Percent of total
Professional Personnel						
Faculty	$ 6,758	15.4	$ 6,560	15.0	$ 6,194	14.1
Research Associates	2,940	6.7	2,668	6.1	2,987	6.8
Research Assistants	6,275	14.3	5,510	12.6	4,877	11.1
Other Professional	2,150	4.9	2,274	5.2	2,065	4.7
Total Professional Personnel	18,123	41.3	17,012	38.9	16,123	36.7
Other Personnel	3,467	7.9	3,499	8.0	3,383	7.7
Fringe Benefits	1,492	3.4	1,618	3.7	1,757	4.0
Total Salaries and Wages	**23,082**	**52.6**	**22,129**	**50.6**	**21,263**	**48.4**
Permanent Equipment	2,677	6.1	2,756	6.3	2,724	6.2
Expendable Equipment and Supplies	3,028	6.9	3,149	7.2	2,900	6.6
Travel	1,273	2.9	1,358	3.1	1,318	3.0
Publication Costs	658	1.5	612	1.4	615	1.4
Computer Costs	1,360	3.1	1,358	3.1	1,188	2.7
Other Costs	2,019	4.6	2,536	5.8	3,778	8.6
Total Direct Costs	**34,097**	**77.7**	**33,894**	**77.5**	**33,784**	**76.9**
Indirect Costs	9,786	22.3	9,840	22.5	10,148	23.1
Total Average Grant	**$43,883**	**100.0**	**$43,734**	**100.0**	**$43,932**	**100.0**

Table 10 **SUMMARY OF NATIONAL SCIENCE FOUNDATION OBLIGATIONS AND AWARDS IN SUPPORT OF RESEARCH APPLICATIONS**
Fiscal Year 1972

	Number of awards	Amount of awards
RESEARCH APPLIED TO NATIONAL NEEDS (RANN)	**341**	**$53,766,889**
Division of Advanced Technology Applications	166	18,913,508
Division of Environmental Systems and Resources	98	19,448,881
Division of Social Systems and Human Resources	25	10,719,202
Office of Exploratory Research and Problem Assessment	52	4,685,298
OFFICE OF INTERGOVERNMENTAL SCIENCE PROGRAMS	**43**	**1,078,003**

Table 11 **SUMMARY OF NATIONAL SCIENCE FOUNDATION OBLIGATIONS AND AWARDS IN SUPPORT OF NATIONAL AND SPECIAL RESEARCH PROGRAMS**
Fiscal Year 1972
(Thousands of Dollars)

Program	Number of Awards	Total Amount Proposed for Awards	Total Amount Obligated
National and Special Research Programs, Total	**452**	**$134,759**	**$85,886**
International Biological Program	38	19,857	9,444
Global Atmospheric Research Program	37	5,028	2,391
International Decade for Ocean Exploration	102	30,153	19,671
Ocean Sediment Coring Program	8	9,159	9,258
Arctic Research Program	61	5,989	3,544
U.S. Antarctic Research Program	139	44,205	27,000
Oceanographic Facilities and Support	65	20,327	14,523
1973 Solar Eclipse (Logistic Support)	2	41	55

Table 12 **SUMMARY OF NATIONAL SCIENCE FOUNDATION OBLIGATIONS IN SUPPORT OF NATIONAL RESEARCH CENTERS**

Fiscal Years 1970-1972
(Thousands of Dollars)

	Fiscal Year 1970			Fiscal Year 1971			Fiscal Year 1972		
	Capital obligations	Research operations & support	Total	Capital obligations	Research operations & support	Total	Capital obligations	Research operations & support	Total
Cerro Tololo Inter-American Observatory	$ 365	$ 1,535	$ 1,900	$ 313	$ 1,967	$ 2,280	$ 385	$ 2,115	$2,500
Kitt Peak National Observatory	46	6,379	6,425	127	7,073	7,200	456	7,244	7,700
National Radio Astronomy Observatory	675	5,125	5,800	-0-	6,837	6,837	80	6,590	6,670
National Astronomy and Atmospheric Center	150	1,400	1,550	3,755	2,344	6,099	1,900	2,787	4,687
National Center for Atmospheric Research	118	11,324	11,442	271	14,225	14,496	1,000	17,177	18,177
Total	**$1,354**	**$25,763**	**$27,117**	**$4,488**	**$32,445**	**$36,911**	**$3,821**	**$35,914**	**$39,735**

Table 13 **NATIONAL SCIENCE FOUNDATION SUPPORT OF COMPUTING ACTIVITIES IN EDUCATION AND RESEARCH**

Grants and Contracts Awarded; Fiscal Year 1972
(Thousands of Dollars)

Programs	Number of Awards	Total Amount Proposed	Total Amount Awarded
Computer Science and Engineering			
Theoretical Computer Science	46	$ 8,110	$ 2,563
Software and Programming Systems	36	8,221	3,589
Computer Systems Design	21	6,572	2,347
	103	22,903	8,499
Computer Applications in Research			
Special Research Resources	20	5,114	2,351
Techniques and Systems	32	3,277	1,747
	52	8,391	4,098
Computer Innovation in Education			
Computer Technology and Systems	21	13,065	4,360
Computer-Oriented Curricular Activities	21	2,481	1,915
Regional Cooperative Computing Activities	75	2,800	2,120
	117	18,346	8,395
Total	276	$ 49,640	$ 20,992

Table 14 **NATIONAL SCIENCE FOUNDATION SCIENCE INFORMATION SERVICE OBLIGATIONS FOR GRANTS AND CONTRACTS AWARDED**
Fiscal Years 1970-1972

Program	Fiscal Year 1970	Fiscal Year 1971	Fiscal Year 1972
Information Systems	$ 9,065,405	$ 9,393,570	$7,956,577
Data Systems	25,100	30,500	179,753
Publications	69,600	136,250	243,650
Research	1,196,084	864,432	911,641
Foreign Science Information	1,077,090	270,146	419,301
Total	**$11,433,279**	**$10,694,898**	**$9,710,922**

Table 15 NATIONAL SCIENCE FOUNDATION SUPPORT OF INTERNATIONAL SCIENCE ACTIVITIES

Fiscal Years 1970-1972
(Thousands of Dollars)

Support Related to International Science by Program Area

	1970	1971	1972
Support of Scientific Research	$15,374	$37,685	$75,269
Science Education Support	2,393	2,848	145
Planning and Policy Studies	7	0	0
Science Information Activities	1,200	188	427
International Cooperative Scientific Activities	1,712	2,180	4,245
Special Foreign Currency Appropriation	2,000[1]	1,996[2]	3,000[2]
Total	**$22,688**	**$44,897**	**$83,086**

International Cooperative Scientific Activities Support by Area of Program Emphasis

	1970	1971	1972
Cooperative Science Program	$1,058	$1,406	$2,488
Scientific Organizations and Resources Program	213	360	579
International Travel	441	414	466
International Institute for Applied Systems Analysis	0	0	712
Subtotal	$1,712	$2,180	$4,245
Special Foreign Currency Program	0	996	2,000
Total	**$1,712**	**$3,176**	**$6,245**

[1] Used in fiscal year 1970 exclusively for scientific and technological information activities.
[2] $1,000,000 for scientific and technological information activities, remainder for research, education, and related activities. The Special Foreign Currency Program for research, education, and related activities was initiated in fiscal year 1971.

Table 16 **SUMMARY OF NATIONAL SCIENCE FOUNDATION OBLIGATIONS AND AWARDS FOR SCIENCE EDUCATION**

Fiscal Year 1972
(Thousands of Dollars)

Program	Number of awards	Total amount proposed	Total amount obligated
Science Education Support, Total	**3,820**	**$298,409**	**$85,355**
Student Development[1]	2,267	77,538	28,034
Instructional Personnel Development	764	101,702	26,555
Instructional Program Development	789	119,169	30,765

SUMMARY OF OBLIGATIONS BY LEVEL OF EDUCATION
Fiscal Years 1971-1972

Program	Fiscal Year 1971	Fiscal Year 1972	Participants 1972
Pre-College Education	$36,690	$34,494	55,029
Undergraduate Education	24,193	28,267	8,311
Graduate Education	37,928	22,595	3,382

[1] Includes fellowships.

Table 17 **NATIONAL SCIENCE FOUNDATION FELLOWSHIP AND TRAINEESHIP PROGRAMS**
Fiscal Year 1972

Program	Number of traineeships requested	Number of institutions requesting traineeships	Number of traineeships awarded	Number of institutions awarded traineeships	Amount obligated
Graduate Traineeships	1,808	224	1,808	224	$10,442,623

	Number of fellowships requested	Number of fellowships offered	Number of fellows entering tenure	Amount obligated
Graduate Fellowships	6,199	1,550	1,460	$ 9,897,278
Total, Traineeships and Fellowships	**8,007**	**3,358**	**3,268**	**$20,339,901**

NATIONAL SCIENCE FOUNDATION FELLOWSHIP AND TRAINEESHIP AWARDS BY FIELDS OF SCIENCE
Fiscal Year 1972
(Based on Awards Offered)

Program	Physics	Chemistry	Astronomy	Mathematical sciences	Environmental sciences	Life sciences	Social sciences	Engineering
Graduate Traineeships	177	170	13	222	76	333	391	426
Graduate Fellowships	120	136	18	249	61	307	452	207
Total, Traineeships and Fellowships	**297**	**306**	**31**	**471**	**137**	**640**	**843**	**633**

Table 18 NATIONAL SCIENCE FOUNDATION COLLEGE SCIENCE IMPROVEMENT PROGRAM

Fiscal Years 1970-1972

Section "A": Individual Institutions

	Proposals		Awards	
Fiscal Year	No.	Amt.	No.	Amt.
1970	58	$12,812,984	25	$5,235,900
1971	57	13,064,244	19	3,451,900
1972	38	11,724,400	14	3,020,000

Section "B": Interinstitutional Consortia

	Proposals		Awards	
Fiscal Year	No.	Amt.	No.	Amt.
1970	23	$4,568,651	11	$887,500
1971	14	1,606,868	5	500,100
1972	7	1,786,600	0	0

Section "C": Two-Year College Cooperative Projects

	Proposals		Awards	
Fiscal Year	No.	Amt.	No.	Amt.
1970	27	$2,325,700	10	$ 680,800
1971	64	7,126,900	32	1,494,300

Section "D": Ethnic Minority Institutions

	Proposals		Awards	
Fiscal Year	No.	Amt.	No.	Amt.
1972	57	$19,822,459	17	$5,047,343

Percent Allocation of COSIP "A" and "C" Funds by Field of Science

	1970	1971	1972
Physics and Astronomy	12	12	6
Chemistry	14	16	10
Mathematical Sciences	9	8	14
Earth Sciences	4	4	4
Life Sciences	16	17	7
Social Sciences	10	16	8
Engineering	11	4	5
Other	24	25	46

Percent Distribution of COSIP "A" and "D" Funds by Type of Expenditure

Category	1970	1971	1972
Faculty Research & Scholarly Activities	25	23	17
Local Course & Curriculum Studies	36	35	40
Scientific Apparatus	27	25	23
Undergraduate Student Activities	8	8	4
Other	4	9	16

Table 19 **NATIONAL SCIENCE FOUNDATION UNIVERSITY SCIENCE DEVELOPMENT PROGRAM**

Fiscal Years 1970-1972
(Thousands of Dollars)

	Proposals		Awards	
Fiscal Year	No.	Amount	No.	Amount
1970	6	$21,401	9	$15,879
1971	9	20,223	9	11,203
1972	9	15,700	9	9,000
Total	**24**	**$57,324**	**27**	**$36,082**

Percent Allocation of USD Funds by Type of Expenditure

Category	1970	1971	1972
Personnel	37.1	60.8	45.9
Facilities	48.3	3.2	12.0
Equipment and Supplies	14.6	36.0	42.1
	100.0	100.0	100.0

Percent Allocation of USD Funds by Field of Science

	1970	1971	1972
Physics	21.7	19.5	39.4
Chemistry	23.0	6.7	28.0
Astronomy	0.0	1.6	0.0
Physical Sciences—Other	2.1	0.0	2.8
Mathematical Sciences	12.0	15.0	2.6
Environmental Sciences	6.8	8.5	0.0
Life Sciences	19.6	30.2	15.7
Social Sciences	2.7	11.8	9.4
Engineering	12.1	6.7	2.1
	100.0	100.0	100.0

Table 20 NATIONAL SCIENCE FOUNDATION INSTITUTIONAL GRANTS FOR SCIENCE

Awards, Fiscal Years 1961-1972; Institutional Expenditures, Fiscal Years 1962-1971
(Millions of Dollars)

Institutional Grant Awards by Level of Degree Offered

Highest Degree Offered	Fiscal Years 1961-72 Number of Institutions		Dollar Amount	
	Number	Percent	Dollars	Percent
Total	**1,075**	**100**	**$128.4**	**100**
Bachelor's[1]	481	42	9.0	7
Master's	335	33	16.7	13
Doctor's	259	25	102.7	80

[1] Includes 130 junior colleges.

Institutional Grant Expenditures by Type of Use

Type of Use	Fiscal Years 1962-1971 Dollars	Percent
Total	**$95.0**	**100**
Equipment and Supplies	47.8	50
Personnel	27.7	29
Facilities	15.5	16
Travel	2.0	2
Other	2.0	2

Institutional Grant Expenditures by Field of Science

Field of Science	Fiscal Years 1962-71 Dollars	Percent
Total	**$95.0**	**100**
Physical sciences	33.3	35
Mathematical sciences	4.8	5
Environmental sciences	7.6	8
Engineering	12.3	13
Life sciences	20.9	22
Psychology	3.8	4
Social Sciences	5.7	6
Other	6.6	7

Table 21 NATIONAL SCIENCE FOUNDATION GRANTS AND CONTRACTS BY STATES

Fiscal Year 1972 (Excluding Fellowships)
(Thousands of Dollars)

State	Total		Scientific Research Project Support		Natl. and Special Research Prog.; Centers; Res. Appl. Nat'l. Needs; Intgvmtl. Sci. Prog.		Institutional Improvement for Science and Computing Act.		Science Info. Act.; Pln'g. & Pol'y. Stdy's.; Int. Coop. Sci. Act.		Science Education Support	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Alabama	68	2,062	17	460	1	26	12	189	4	2	34	1,424
Alaska	49	2,804	29	1,333	14	1,388	1	67	1	11	4	28
Arizona	111	13,433	64	2,194	10	10,401	8	173	8	4	21	571
Arkansas	31	1,018	10	277			5	81	1	15	15	645
California	1,363	81,189	835	40,756	13	28,180	88	4,293	109	872	196	7,088
Colorado	245	37,709	106	3,438	37	30,671	17	761	21	177	64	2,661
Connecticut	223	7,280	148	5,867	13	715	13	262	15	52	36	674
Delaware	33	2,049	15	545	4	718	2	44	5	3	7	738
District of Columbia	461	18,667	103	3,260	107	2,745	11	448	111	8,678	129	3,536
Florida	255	12,610	145	6,386	24	2,823	24	1,837	14	11	48	1,562
Georgia	164	6,062	79	2,242	9	958	18	325	10	457	48	2,100
Hawaii	89	3,995	54	2,018	10	1,322	4	294	8	73	13	289
Idaho	25	551	6	118	1	88	2	36			16	298
Illinois	585	29,341	385	18,126	23	4,336	36	2,673	40	513	101	3,693
Indiana	293	15,173	174	8,302	5	593	18	2,602	18	201	78	3,475
Iowa	109	3,685	45	1,468	2	632	17	553	7	6	38	1,006
Kansas	98	3,165	47	1,524	1	4	9	733	6	8	35	897
Kentucky	70	1,441	23	560	2	61	8	142	3	2	34	677
Louisiana	130	3,974	61	1,608	4	211	14	216	5	5	46	1,934

Table 21—Continued

State	Total		Scientific Research Project Support		Natl. and Special Research Prog.; Centers; Res. Appl. Nat'l. Needs; Intgvrntl. Sci. Prog.		Institutional Improvement for Science and Computing Act.		Science Info. Act.; Pln'g. & Pol'y. Stdy's.; Int. Coop. Sci. Act.		Science Education Support	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Maine	30	923	12	383			3	45			15	495
Maryland	277	10,854	137	5,887	36	3,253	15	609	25	76	64	1,030
Massachusetts	742	46,305	463	24,701	82	14,891	41	2,233	55	179	101	4,301
Michigan	355	15,789	214	9,170	11	2,181	26	1,698	21	218	83	2,522
Minnesota	157	5,440	78	2,721	7	981	14	370	14	178	43	1,189
Mississippi	56	2,736	15	398			5	89	2	52	34	2,197
Missouri	174	5,518	93	3,209	9	750	16	434	7	4	49	1,121
Montana	33	1,109	12	285	2	325	3	59			16	440
Nebraska	42	1,107	17	656	2	17	6	120	1	1	16	314
Nevada	18	623	3	342	3	147	3	67	2	2	7	65
New Hampshire	62	1,947	27	844	7	334	4	134	2	15	22	619
New Jersey	231	9,255	142	6,450	9	979	18	687	15	20	47	1,118
New Mexico	59	1,906	29	816	4	506	7	267	1	1	18	316
New York	1,174	58,219	679	36,343	70	8,909	99	4,955	103	1,686	223	6,357
North Carolina	195	10,702	94	3,803	12	2,302	23	1,863	12	46	54	2,688
North Dakota	26	440	3	92			4	88	2	1	17	262
Ohio	340	10,221	146	5,566	16	602	30	668	30	708	118	2,676
Oklahoma	96	2,722	27	783	6	281	9	133	8	36	46	1,489
Oregon	170	7,742	89	3,147	17	2,216	10	363	7	12	47	2,004
Pennsylvania	609	24,640	327	14,769	16	1,740	96	3,540	43	944	128	3,646

Table 21—Continued

State	Total		Scientific Research Project Support		Natl. and Special Research Prog., Centers; Res. Appl. Nat'l. Needs; Intgvmtl. Sci. Prog.		Institutional Improvement for Science and Computing Act.		Science Info. Act.; Pln'g. & Pol'y. Stdy's.; Int. Coop. Sci. Act.		Science Education Support	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Rhode Island	127	5,989	83	3,664	9	1,313	8	417	9	137	18	458
South Carolina	59	1,235	14	381	2	47	6	97	3	2	34	709
South Dakota	33	1,128	3	124	6	294	4	76			20	634
Tennessee	141	7,876	57	1,575	6	3,263	13	1,580	10	81	55	1,377
Texas	382	13,661	189	7,126	19	1,846	46	1,443	28	179	100	3,068
Utah	99	5,156	60	2,260	6	1,724	6	900	2	1	25	671
Vermont	27	733	9	147	1	132	4	96	1		12	398
Virginia	198	7,185	75	2,405	21	505	28	2,464	27	506	49	1,315
Washington	233	12,457	141	5,000	27	5,895	14	315	12	100	39	1,147
West Virginia	30	6,943	4	37	3	6,546	5	87			18	273
Wisconsin	302	10,595	178	6,655	12	1,395	21	508	20	119	71	1,918
Wyoming	26	977	15	308	3	111	1	36	1	1	5	521
United States Total	10,884	538,350	5,760	250,220	825	149,432	893	41,719	849	16,363	2,557	80,616
Federal Government Total	114	33,743	17	986	78	31,552	2	162	13	979	4	85
U.S. Possessions Total	12	4,849	1	82	4	4,625	5	87			2	56
Foreign Countries Total	13	430	6	123	2	118			4	82	1	106
Grand Total	11,023	577,373	5,784	251,391	909	185,727	900	41,968	866	17,425	2,564	80,863

All tables showing dollar data are on an expenditure basis, except for those Federal Government tables which specify obligations. Obligations represent the amounts for orders placed, contracts awarded, services to be received, and similar transactions during a given period, regardless of when the funds were appropriated and when future payment of money is required. For any given year, obligations differ from expenditures because not all funds are expended during the year obligated.

Table 22 **RESEARCH AND DEVELOPMENT**
INTERSECTORAL TRANSFER OF FUNDS USED FOR PERFORMANCE, 1973 (est.)[1]
(Millions of Dollars)

Sources of funds	Performers: Federal Government	Industry[2]	Universities and colleges[3]	Associated FFRDC's[4]	Other nonprofit institutions[2]	Total	Percent distribution, sources
Federal Government	4,500	8,100	1,865	800	725	15,990	53.1
Industry		12,200[5]	80		110	12,390	41.2
Universities and colleges			1,285[5]			1,285	4.3
Other nonprofit institutions			195		240[5]	435	1.4
Total	**4,500**	**20,300**	**3,425**	**800**	**1,075**	**30,100**	
			4,225				
Percent distribution, performers	15.0	67.4	11.3	2.7	3.6		100.0
			14.0				

[1] All data are based on reports by performers.
[2] Expenditures for Federally Funded Research and Development Centers administered by both industry and by nonprofit institutions are included in the totals of their respective sectors.
[3] Includes agricultural experiment stations.
[4] Federally Funded Research and Development Centers administered by individual universities and colleges and by university-consortia.
[5] Includes State and local government funds.

Table 23 **BASIC RESEARCH**

INTERSECTORAL TRANSFER OF FUNDS USED FOR PERFORMANCE, 1973 (est.)[1]

(Millions of Dollars)

Sources of funds	Federal Government	Industry[2]	Performers: Universities and colleges[3]	Performers: Associated FFRDC's[4]	Performers: Other nonprofit institutions[2]	Total	Percent distribution, sources
Federal Government	590	145	1,420	300	145	2,600	57.8
Industry		555	50		30	635	14.1
Universities and colleges			1,030[5]			1,030	22.9
Other nonprofit institutions			140		95[5]	235	5.2
Total	**590**	**700**	**2,640**	**300**	**270**	**4,500**	
			2,940				
Percent distribution, performers	13.1	15.6	58.6	6.7	6.0		100.0
			65.3				

[1] All data are based on reports by performers.

[2] Expenditures for Federally Funded Research and Development Centers administered by both industry and by nonprofit institutions are included in the totals of their respective sectors.

[3] Includes agricultural experiment stations.

[4] Federally Funded Research and Development Centers administered by individual universities and colleges and by university-consortia.

[5] Includes State and local government funds.

Table 24 FEDERAL OBLIGATIONS FOR RESEARCH AND DEVELOPMENT, BY CHARACTER OF WORK AND R&D PLANT, FISCAL YEARS 1963-1972

(Thousands of Dollars)

Fiscal year	Total R&D	Research		Development	R&D plant
		Basic	Applied		
1963	$12,494,692	$1,388,644	$2,651,970	$8,454,078	$1,168,268
1964	14,225,424	1,566,571	2,897,892	9,760,961	1,098,516
1965	14,614,323	1,689,931	3,163,953	9,760,439	1,131,603
1966	15,320,448	1,839,589	3,431,251	10,049,606	858,306
1967	16,529,265	2,003,605	3,269,416	11,256,244	820,087
1968	15,921,424	2,056,316	3,304,238	10,560,870	803,830
1969	15,637,227	2,077,124	3,151,274	10,408,829	669,012
1970	15,329,816	2,041,521	3,555,384	9,732,911	524,448
1971	15,549,506	2,132,348	3,941,680	9,475,478	611,244
1972[1]	16,820,926	2,396,170	4,329,682	10,096,074	664,403

[1] Estimated.

Table 25 **FEDERAL OBLIGATIONS FOR RESEARCH AND DEVELOPMENT, BY AGENCY, 1963-1972**

(Millions of Dollars)

Agency	1963	1964	1965	1966	1967	1968	1969	1970	1971	(est.) 1972
Total	**$12,494.7**	**$14,225.4**	**$14,614.3**	**$15,320.4**	**$16,529.3**	**$15,921.4**	**$15,637.2**	**$15,329.8**	**$15,549.5**	**$16,802.9**
Department of Agriculture	168.0	189.0	224.8	234.9	252.6	253.5	260.1	281.2	304.9	348.5
Atomic Energy Commission	1,077.9	1,236.0	1,240.7	1,212.4	1,257.3	1,369.0	1,405.9	1,346.0	1,302.9	1,307.8
Department of Defense	7,285.7	7,261.9	6,796.5	7,023.6	8,049.2	7,709.3	7,696.3	7,360.4	7,509.0	8,374.1
Department of Health, Education and Welfare	656.2	776.9	869.4	1,014.4	1,146.6	1,251.8	1,297.4	1,221.0	1,476.1	1,763.5
Department of the Interior	92.1	106.4	113.2	143.2	170.4	190.6	207.6	157.9	193.7	224.0
National Aeronautics and Space Administration	2,857.4	4,286.6	4,961.5	5,050.0	4,867.0	4,429.4	3,963.3	3,799.9	3,257.9	3,208.0
National Science Foundation	154.1	170.2	187.2	243.7	262.4	283.5	273.8	289.0	336.9	451.1
Department of Transportation[1]	–	–	–	171.7	283.6	171.7	228.0	317.3	482.5	364.5
Other Departments and Agencies	203.3	198.4	231.2	226.5	240.2	262.8	304.8	557.1	685.6	761.4

[1]Prior to 1966, obligations to component parts of the Department are included in amounts shown for "Other Departments and Agencies."

Table 26 **FEDERAL EXPENDITURES FOR RESEARCH AND DEVELOPMENT, BY FUNCTION, FISCAL YEARS 1963-1972**

(Millions of Dollars)

Function	1963	1964	1965	1966	1967	1968	1969	1970	1971	(est.) 1972
Total, all functions	**$11,338.5**	**$13,758.9**	**$17,811.4**	**$14,970.2**	**$16,073.0**	**$16,333.3**	**$15,695.4**	**$15,159.3**	**$15,300.1**	**$16,007.4**
National Defense	7,869.5	8,665.2	7,864.0	7,887.9	8,856.6	9,352.7	9,068.0	8,784.2	8,855.6	9,421.4
Space Research and Technology	2,327.0	3,733.2	4,562.0	5,360.6	5,137.1	4,597.6	4,186.4	3,698.8	3,338.2	3,138.0
Health	542.8	685.4	802.6	733.5	853.1	1,052.7	1,014.8	1,075.5	1,116.5	1,262.9
Education and Manpower	132.3	179.9	183.5	231.8	320.1	381.2	404.6	427.2	496.2	615.7
Commerce and Transportation	140.2	144.5	184.2	241.5	340.3	331.2	336.6	420.1	629.5	556.1
Natural Resources and Environment	129.6	135.4	154.0	170.9	202.5	227.3	251.9	278.8	332.1	420.4
Agriculture and Rural Development	139.2	150.9	169.6	196.6	215.6	226.9	229.6	240.1	262.9	269.1
Community Development and Housing	.2	.2	4.5	51.0	42.3	47.3	87.4	92.8	114.3	125.9
Income Security	17.5	22.1	32.3	39.7	41.7	48.7	47.9	48.8	55.6	62.0
Veterans Benefits and Services	29.9	32.3	36.6	38.4	41.3	44.1	49.8	58.0	60.9	66.0
General Government	.7	.7	.7	1.7	2.1	3.4	7.8	7.4	13.3	25.0
International Affairs and Finance	9.7	9.0	17.6	18.3	20.2	20.1	20.4	27.5	25.1	24.8

Table 27 **FEDERAL OBLIGATIONS FOR BASIC RESEARCH, BY AGENCY, FISCAL YEARS 1968-1972**

(Thousands of Dollars)

Agency	1968	1969	1970	1971	(est.) 1972
Total	**$2,056,316**	**$2,077,124**	**$2,041,521**	**$2,132,348**	**$2,395,170**
Department of Agriculture	99,657	106,636	115,709	118,414	137,862
Atomic Energy Commission	282,359	285,145	286,669	276,897	270,284
Department of Defense	263,490	276,458	246,670	261,545	264,873
Department of Health, Education and Welfare	397,207	370,669	387,940	397,316	466,897
Department of the Interior	49,947	54,490	49,923	52,690	59,221
National Aeronautics and Space Administration	655,628	677,751	637,034	680,264	750,341
National Science Foundation	251,550	247,589	244,977	272,566	353,445
Other Departments and Agencies	56,478	58,386	72,599	72,656	92,247

Table 28 FEDERAL OBLIGATIONS FOR BASIC RESEARCH, BY AGENCY AND FIELD OF SCIENCE, FISCAL YEAR 1972 (est.)

(Thousands of Dollars)

Agency	Total	Physical Sciences						Life Sci.	Soc. Sci.	Psychology	Engineering	Other
		Physics	Chemistry	Astronomy	Other Phys. Sci.	Mathematics	Environmental Sci.					
Total	**$2,396,170**	**$381,351**	**$183,473**	**$201,377**	**$3,396**	**$80,409**	**$466,563**	**$138,382**	**$80,586**	**$57,648**	**$225,546**	**$7,597**
Dept. of Agriculture	137,862	2,687	15,717	–	179	337	1,863	93,460	13,379	6	10,234	–
Atomic Energy Comm.	270,284	183,986	34,492	–	–	4,800	–	35,525	–	–	11,481	–
Dept. of Defense	264,873	38,841	12,844	6,484	1,217	28,542	89,592	31,321	946	10,887	89,371	5,028
Dept. of Health Ed. and Welfare	466,897	112	22,588	–	–	1,550	19	380,278	34,732	33,259	2,900	1,479
Dept. of the Interior	59,221	3,428	9,266	–	–	768	33,311	9,815	1,331	–	1,255	46
Nat'l Aero. & Space Adm.	750,341	96,841	49,506	185,152	–	1,136	257,763	98,792	–	1,183	79,906	–
Nat'l Science Foundation	353,445	47,173	32,258	26,494	2,000	22,924	82,383	63,981	23,178	11,225	42,621	210
Other Depts. & Agencies	92,247	8,483	6,766	4,247	–	350	20,822	25,210	17,000	980	7,770	833

Table 29 FEDERAL OBLIGATIONS TO UNIVERSITIES AND COLLEGES, BY TYPE OF PROGRAM, FISCAL YEARS 1970-1971

(Millions of Dollars)

Agency	Total Federal Obligations		Academic Science Obligations							
	1970	1971	1970				1971			
			Total	R&D	R&D plant	Other science	Total	R&D	R&D plant	Other science
Total	**$3,226.7**	**$3,480.2**	**$2,187.6**	**$1,446.6**	**$ 44.8**	**$696.2**	**$2,335.9**	**$1,544.1**	**$ 29.9**	**$761.8**
Dept. of Agriculture	182.1	214.6	**182.1**	67.4	1.1	113.5	**214.6**	74.8	—	139.8
Atomic Energy Commission	114.5	105.8	**114.5**	101.4	7.1	5.9	**105.8**	95.9	4.8	5.2
Dept. of Commerce	4.9	9.7	**3.9**	3.2	*	.7	**7.6**	6.9	—	.8
Dept. of Defense	265.5	241.8	**265.5**	265.5	—	*	**241.8**	241.8	—	—
Dept. of Health, Education and Welfare	2,051.0	2,263.4	**1,036.7**	614.9	20.0	401.9	**1,142.3**	695.7	15.2	431.5
Dept. of the Interior	27.7	22.6	**27.7**	27.1	—	.6	**22.6**	21.3	—	1.3
Nat'l Aeronautics and Space Administration	131.2	134.1	**131.2**	127.4	—	3.8	**134.1**	128.5	.2	5.3
National Science Foundation	387.4	387.7	**387.4**	201.2	16.5	169.7	**387.7**	216.9	9.7	161.1
Other	62.4	100.5	**38.6**	38.6	—	—	**79.3**	62.4	—	16.9

*Less than $50,000.

Table 30 **DISTRIBUTION OF FEDERAL R&D OBLIGATIONS, BY STATE, FISCAL YEARS 1965, 1970, and 1971**[1]

(Thousands of Dollars)

State	1965 Amount	1965 Percent distribution	1970 Amount	1970 Percent distribution	1971 Amount	1971 Percent distribution
Total	**$14,356,775**	**100.0**	**$14,980,751**	**100.0**	**$15,239,833**	**100.0**
Alabama	370,719	2.6	357,221	2.4	360,011	2.4
Alaska	14,415	.1	43,179	.3	58,200	.4
Arizona	76,557	.5	72,803	.5	88,723	.6
Arkansas	6,619	—	9,787	.1	20,822	.1
California	4,553,252	31.7	3,871,053	25.8	3,295,379	21.6
Colorado	212,332	1.5	274,113	1.8	264,187	1.7
Connecticut	184,532	1.3	160,027	1.1	149,937	1.0
Delaware	7,140	—	16,299	.1	12,951	.1
Dist. of Columbia	374,270	2.6	468,493	3.1	478,162	3.1
Florida	459,798	3.2	824,785	5.5	890,381	5.8
Georgia	58,406	.4	72,268	.5	78,751	.5
Hawaii	41,524	.3	43,815	.3	38,332	.3
Idaho	63,553	.4	75,008	.5	75,287	.5
Illinois	191,741	1.3	239,563	1.6	249,089	1.6
Indiana	71,879	.5	91,905	.6	74,581	.5

—less than 0.05 percent.

[1] Represents eight Federal agencies in fiscal year 1965, ten agencies in fiscal year 1970 and 11 agencies in 1971 whose combined obligations for Federal research and development represented more than 98 percent of the Federal total.

Table 30—Continued

State	1965 Amount	1965 Percent distribution	1970 Amount	1970 Percent distribution	1971 Amount	1971 Percent distribution
Iowa	28,774	.2	32,661	.2	32,893	.2
Kansas	25,676	.2	16,646	.1	24,335	.2
Kentucky	17,123	.1	20,413	.1	23,030	.2
Louisiana	377,068	2.6	146,488	1.0	90,111	.6
Maine	4,257	—	13,262	.1	13,591	.1
Maryland	876,624	6.1	1,063,359	7.1	1,201,248	7.9
Massachusetts	733,672	5.1	760,920	5.1	886,989	5.8
Michigan	155,153	1.1	162,818	1.1	187,265	1.2
Minnesota	106,341	.7	109,270	.7	102,812	.7
Mississippi	36,677	.3	28,276	.2	46,696	.3
Missouri	231,716	1.6	291,181	1.9	596,917	3.9
Montana	8,577	.1	11,646	.1	17,592	.1
Nebraska	7,652	.1	10,648	.1	10,406	.1
Nevada	154,525	1.1	190,948	1.3	159,040	1.0
New Hampshire	28,767	.2	27,268	.2	34,042	.2
New Jersey	410,676	2.9	742,526	5.0	745,131	4.9
New Mexico	425,322	3.0	444,089	3.0	458,674	3.0
New York	1,289,270	9.0	1,235,594	8.2	1,119,482	7.3
North Carolina	57,752	.4	63,908	.4	82,715	.5

Table 30--Continued

State	1969 Amount	1969 Percent distribution	1970 Amount	1970 Percent distribution	1971 Amount	1971 Percent distribution
North Dakota	9,003	—	8,878	.1	9,063	.1
Ohio	379,076	2.6	407,342	3.1	516,133	3.4
Oklahoma	28,379	.2	29,483	.2	26,332	.2
Oregon	29,584	.2	33,848	.2	41,863	.3
Pennsylvania	528,697	3.7	538,761	3.6	548,899	3.6
Rhode Island	37,532	.3	29,911	.2	50,535	.3
South Carolina	17,104	.1	17,804	.1	23,382	.2
South Dakota	3,467	—	6,091	—	9,567	.1
Tennessee	203,733	1.4	193,814	1.3	188,498	1.2
Texas	731,009	5.1	649,122	4.3	595,884	3.9
Utah	44,997	.3	61,052	.4	66,789	.4
Vermont	3,951	—	9,462	.1	13,733	.1
Virginia	284,215	2.0	352,685	2.4	424,880	2.8
Washington	214,258	1.5	412,230	2.8	571,157	3.7
West Virginia	19,814	.1	19,631	.1	32,116	.2
Wisconsin	125,836	.9	87,143	.6	92,609	.6
Wyoming	4,204	—	7,161	—	8,102	.1
Outlying Areas	9,247	.1	17,260	.1	16,612	.1
Offices Abroad	29,508	.2	56,826	.4	42,927	.3

Table 31 **EXPENDITURES FOR INDUSTRIAL BASIC RESEARCH, APPLIED RESEARCH, AND DEVELOPMENT PERFORMANCE, 1963-1973 (Est.)**

(Millions of Dollars)

Year	Total	Basic research	Applied research	Development
1963	$17,630	$522	$7,457	$ 9,651
1964	13,512	549	2,600	10,363
1965	14,185	592	2,656	10,936
1966	15,548	624	2,843	12,081
1967	16,386	629	2,916	12,841
1968	17,429	642	3,124	13,663
1969	18,318	618	3,287	14,413
1970	18,168	629	3,399	14,140
1971 (Prelim.)	18,420	625	3,388	14,407
1972 (Est.)	19,540	680	3,545	15,335
1973 (Est.)	20,300	700	3,760	15,830

Table 32 **PERFORMANCE OF INDUSTRIAL RESEARCH AND DEVELOPMENT, BY INDUSTRY AND SOURCE OF FUNDS, 1960, 1970 and 1971 (prelim.)**

(Millions of Dollars)

Industry	Total Funds			Federal Funds			Company Funds		
	1960	1970	1971	1960	1970	1971	1960	1970	1971
Total	**$10,509**	**$18,160**	**$18,420**	**$6,081**	**$7,779**	**$7,671**	**$4,428**	**$10,380**	**$10,740**
Food and kindred products	104	235	245	9	3	2	95	232	243
Textiles and apparel	38	58	58	9	(NA)	(NA)	29	(NA)	(NA)
Lumber, wood prod. & furn.	10	48	48	1	—	—	9	48	48
Paper and allied products	56	178	187	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Chem. & allied products	980	1,766	1,822	171	180	183	807	1,586	1,639
Petro. refining & extraction	296	515	505	20	22	17	276	493	488
Rubber products	121	220	230	38	22	20	83	198	210
Stone, clay and glass products	88	157	156	(NA)	2	3	(NA)	155	153
Primary metals	177	275	275	15	10	6	162	265	269
Fabricated metal products	148	200	230	36	6	8	109	194	222
Machinery	949	1,849	1,775	391	238	266	558	1,410	1,489
Electrical equip. & communications	2,532	4,352	4,523	1,675	2,261	2,293	847	2,091	2,230
Motor veh. & other transp. equip.	884	1,582	1,750	216	338	301	668	1,274	1,456
Aircraft & missiles	3,514	3,245	4,040	3,150	4,032	3,928	364	1,213	1,012
Professional & sci. instruments	328	851	831	153	204	158	176	647	673
Other mfg. & non-mfg. industries	287	837	836	182	(NA)	(NA)	105	(NA)	(NA)

NA—Not separately available, but included in total.

Table 33 **SELECTED FINANCIAL DATA ON INTRAMURAL R&D PERFORMANCE OF INDEPENDENT NONPROFIT INSTITUTIONS, BY TYPE OF INSTITUTION, 1969**

(Thousands of Dollars)

	Total R&D	Research Institutes	FFRDC's[1]	Voluntary Hospitals	Societies and Academies of Science	Science Exhibitors	Foundations	Other Nonprofit Organizations
Total	**$845,299**	**$361,019**	**$277,314**	**$130,246**	**$37,643**	**$8,094**	**$14,230**	**$16,753**
Source of Funds:								
Federal government	606,595	224,379	262,564	84,228	26,306	2,302	1,307	5,509
State government	10,795	7,265	477	1,723	1,001	138	23	168
Local government	6,059	2,430	2,912	195	260	27	—	237
Foundations	28,431	12,744	1,423	9,069	1,066	199	1,141	2,789
Voluntary health agencies	8,297	4,255	—	3,890	100	8	2	42
Industry	81,272	73,566	3,419	1,773	880	10	—	1,624
Institution's own funds	81,484	25,904	5,003	24,222	5,367	3,438	11,674	5,876
Other sources	22,366	10,476	1,516	5,148	2,663	1,972	83	508
Area of Science:								
Engineering	257,697	113,648	138,459	153	5,143	15	118	161
Physical sciences	103,743	47,990	46,561	2,137	5,367	85	1,573	30
Environmental sciences	16,770	8,293	5,045	79	667	1,217	1,369	100
Mathematics	35,401	14,252	20,195	738	77	—	—	139
Life sciences	265,967	101,073	14,073	123,166	12,516	4,419	6,655	4,065
Psychology	29,843	14,741	5,717	3,192	732	146	534	4,781
Social sciences	99,931	53,724	32,049	415	3,576	2,202	3,981	3,984
Other sciences, NEC	35,947	7,298	15,215	366	9,565	10	—	3,493

[1] Federally Funded Research and Development Centers administered by nonprofit organizations.

Table 34 **SELECTED FINANCIAL CHARACTERISTICS OF SCIENCE AND ENGINEERING ACTIVITIES IN UNIVERSITIES AND COLLEGES, BY STATE AND TYPE OF EXPENDITURE, 1970**

(Millions of Dollars)

State	Total, Selected Activities	Current Expenditures for Separately Budgeted Research and Development			Current Direct Expenditures for Instruction and Departmental Research	Capital Expenditures for Research and Development and Instruction		
		Total	Federally financed	Other		Total	Federally financed	Other
U.S. Total	**$6,655.5**	**$2,356.8**	**$1,658.3**	**$698.5**	**$3,346.9**	**$951.9**	**$279.3**	**$672.6**
Alabama	77.2	19.2	13.4	5.8	45.3	12.6	5.2	7.5
Alaska	12.5	9.2	5.9	3.3	3.0	.3	.1	.1
Arizona	68.8	16.8	9.5	7.2	32.8	19.3	9.9	9.3
Arkansas	25.6	8.9	4.6	4.3	14.7	2.0	.7	1.4
California	691.0	266.6	200.3	66.4	354.8	69.7	23.3	46.4
Colorado	139.2	51.3	41.0	10.2	49.5	38.4	14.4	24.0
Connecticut	141.3	51.2	39.6	11.7	65.1	25.0	3.8	21.2
Delaware	18.6	4.8	2.9	1.9	10.4	3.5	.4	3.1
District of Columbia	64.1	24.8	20.6	4.2	32.0	7.3	3.9	3.4
Florida	146.1	55.8	28.6	27.2	70.5	19.8	7.1	12.7
Georgia	134.0	44.5	25.2	19.3	68.7	20.8	3.1	17.7
Hawaii	43.0	18.0	10.4	7.6	11.9	13.1	5.1	8.0
Idaho	15.9	6.5	2.8	3.7	7.8	1.6	.3	1.3
Illinois	319.7	103.9	77.2	26.7	178.7	37.1	8.8	28.3

Table 34—Continued

State	Total Selected Activities	Current Expenditures for Separately Budgeted Research and Development			Current Direct Expenditures for Instruction and Departmental Research	Capital Expenditures for Research and Development and Instruction		
		Total	Federally financed	Other		Total	Federally financed	Other
Indiana	156.0	45.9	33.4	12.5	84.0	27.0	10.5	16.5
Iowa	97.6	28.2	17.2	11.1	55.1	14.3	5.2	9.1
Kansas	79.0	28.1	18.1	10.0	42.8	8.2	3.4	4.7
Kentucky	72.6	14.2	10.0	4.2	40.7	17.6	7.2	10.4
Louisiana	88.5	35.2	21.2	13.9	44.1	9.2	3.6	5.6
Maine	14.3	3.4	1.6	1.8	9.6	1.3	.3	1.0
Maryland	118.2	52.8	42.0	10.8	53.4	12.0	5.3	6.7
Massachusetts	432.3	204.0	173.8	30.2	189.1	39.2	7.5	31.7
Michigan	280.4	86.5	65.0	21.5	146.5	47.3	16.0	31.3
Minnesota	136.3	40.4	27.8	12.5	64.9	31.0	5.2	25.9
Mississippi	44.1	15.3	9.1	6.2	22.9	5.9	2.2	3.7
Missouri	170.3	64.1	43.7	20.4	79.9	26.3	5.5	20.8
Montana	24.6	8.6	4.7	3.9	13.7	2.4	.4	2.0
Nebraska	53.9	18.3	6.6	11.6	28.5	7.1	2.7	4.3
Nevada	12.8	5.5	2.9	2.7	4.9	2.3	.6	1.7
New Hampshire	30.2	9.0	7.5	1.5	13.3	7.8	1.5	6.3
New Jersey	136.6	44.5	31.3	13.2	66.7	25.4	7.0	18.3
New Mexico	34.5	19.8	16.9	3.0	11.4	3.3	.9	2.4
New York	731.6	274.1	202.6	71.5	358.4	99.1	17.8	81.3
North Carolina	171.7	59.3	42.4	16.9	73.2	39.2	16.3	22.9

Table 34—Continued

State	Total, Selected Activities	Current Expenditures for Separately Budgeted Research and Development			Current Direct Expenditures for Instruction and Departmental Research	Capital Expenditures for Research and Development and Instruction		
		Total	Federally financed	Other		Total	Federally financed	Other
North Dakota	20.9	4.5	1.8	2.6	15.4	1.0	.6	.4
Ohio	247.2	72.0	50.3	21.7	137.4	37.9	12.9	24.9
Oklahoma	54.4	17.8	8.7	9.1	32.6	4.0	1.2	2.8
Oregon	80.9	30.7	21.8	8.9	41.9	8.3	4.5	3.8
Pennsylvania	411.0	130.1	89.5	40.6	215.2	65.7	20.0	45.7
Rhode Island	30.0	12.4	8.7	3.7	15.1	2.5	1.4	1.1
South Carolina	38.6	6.8	4.6	4.2	24.9	4.9	1.9	3.0
South Dakota	22.4	9.8	3.6	6.1	9.9	2.7	1.0	1.7
Tennessee	90.2	31.1	23.1	8.0	51.3	7.8	2.5	5.4
Texas	290.4	102.7	61.8	40.8	148.9	38.8	10.6	28.1
Utah	49.8	20.1	15.7	4.5	22.6	7.1	2.9	4.1
Vermont	27.5	5.0	3.9	1.1	16.6	5.8	1.1	4.8
Virginia	101.2	25.4	17.8	7.6	53.5	22.3	5.3	17.0
Washington	127.3	47.4	33.2	14.2	65.2	14.7	2.6	12.1
West Virginia	42.2	8.3	5.8	2.5	28.7	5.2	2.4	2.8
Wisconsin	186.2	70.5	39.9	30.6	88.2	21.5	1.8	19.6
Wyoming	19.6	6.2	3.4	2.8	9.1	4.2	1.2	3.0
Outlying areas	32.3	9.0	4.5	4.5	22.0	1.3	.2	1.1

Data may not add to total because of rounding.

Table 35 **STATE AGENCY EXPENDITURES FOR RESEARCH AND DEVELOPMENT IN THE 10 LEADING STATES, BY FUNCTIONAL AREA, FISCAL YEAR 1968**

(Thousands of Dollars)

State	Total	Health and hospitals	Natural resources, other than agriculture	High-ways	Education, other than institutions of higher education	Agri-culture	Police protection and correction	Financial adminis-tration and general control	Public welfare	All other
Total	**$154,724**	**$66,570**	**$38,978**	**$20,400**	**$15,631**	**$2,994**	**$2,653**	**$2,477**	**$1,904**	**$3,117**
New York	36,631	31,484	394	2,182	1,410	—	202	144	—	816
California	28,536	12,897	10,031	2,759	431	48	1,469	11	674	216
Illinois	8,756	4,364	3,163	1,020	100	—	—	109	—	—
North Carolina	7,221	720	336	241	4,728	965	—	78	—	154
Pennsylvania	6,802	2,092	1,808	988	324	507	18	244	124	697
Texas	6,644	1,833	207	2,217	2,186	200	—	—	—	—
Michigan	3,369	905	962	877	291	—	240	—	62	33
Washington	3,222	353	1,628	505	183	350	176	17	—	11
Florida	3,193	1,189	1,627	362	—	—	—	—	12	—
New Jersey	3,079	1,863	388	196	503	—	69	48	—	12
All other	47,274	8,870	18,434	9,053	5,475	924	479	1,826	1,032	1,178

NOTE: Detail may not add to total because of rounding.

THE NATIONAL SCENE—**SCIENTIFIC MANPOWER AND EDUCATION**

Table 36 TOTAL EXPENDITURES BY REGULAR EDUCATIONAL INSTITUTIONS, AND FEDERAL FUNDS INVOLVED BY LEVEL OF INSTRUCTION, 1960-1961 TO 1969-1970

(In Billions of Current Dollars)

	Elementary and secondary education				Institutions of higher education			
	Expenditures				Expenditures			
Year	Total[1]	Current expenditures[2]	Capital outlay	Federal funds involved[1]	Total	Current expenditures[3]	Capital outlay	Federal funds involved
1960-61	$19.4	$16.1	$ 3.3	(NA)	$ 7.7	$ 6.0	$ 1.7	(NA)
1961-62	21.3	17.7	3.4	$ .9	8.5	6.8	1.7	$ 1.6
1962-63	22.6	19.2	3.1	(NA)	10.2	7.7	2.5	(NA)
1963-64	24.8	21.0	3.5	1.1	11.3	8.8	2.5	2.2
1964-65	27.2	22.7	4.2	1.1	12.9	10.1	2.8	2.7
1965-66	30.2	25.6	4.3	2.2	15.2	11.9	3.3	2.9
1966-67	32.3	27.5	4.5	2.2	17.5	13.6	3.9	3.3
1967-68	37.4	32.3	4.8	3.0	19.9	15.8	4.1	3.8
1968-69	39.9	34.4	5.2	2.9	22.0	17.9	4.1	3.7
1969-70	45.7	39.9	5.5	3.3	24.9	21.6	4.3	4.2

[1] Includes expenditures by other than regular institutions, such as Federal schools for Indians, Federally operated schools on military posts, and residential schools for exceptional children (approximately $300 million in each year beginning 1961-62), which are not separately reported by current and capital outlay expenditures.

[2] Includes interest.

[3] Excludes expenditures from current funds for capital outlay.

NA—Not available.

Source: Office of Education.

Table 37 **FINANCIAL STATISTICS OF INSTITUTIONS OF HIGHER EDUCATION, 1968-69 AND 1969-70**

Current Fund Income	1968-69		1969-70	
	Millions	Percent	Millions	Percent
Total	**$18,974.3**	**100.0**	**$21,638.6**	**100.0**
Educational and general purposes	14,417.3	76.0	16,593.6	76.7
Tuition and fees	3,829.8	20.2	4,438.5	20.5
Federal Government:[1]				
Research grants	1,449.6	7.6	1,489.2	6.9
Other	1,070.3	5.6	1,211.5	5.6
State and local governments	5,475.8	28.9	6,626.0	30.6
Private gifts and grants[2]	1,331.8	7.0	1,450.9	6.7
Other	1,260.0	6.6	1,377.5	6.4
Major public service programs[3]	1,282.4	6.8	1,470.7	6.8
Auxiliary enterprises	2,695.8	14.2	2,906.3	13.4
Student aid income[4]	578.8	3.1	668.1	3.1

Current Fund Expenditures	1968-69		1969-70	
	Millions	Percent	Millions	Percent
Total	**$18,578.8**	**100.0**	**$21,161.7**	**100.0**
Educational and general	13,918.7	74.9	15,892.1	75.1
Institutional and departmental research	5,973.5	32.2	6,922.6	32.7
Operation and maintenance of physical plant	1,343.4	7.2	1,549.2	7.3
Libraries	574.5	3.1	656.4	3.1
Organized research	2,046.1	11.0	2,155.0	10.2
Other[5]	3,981.2	21.4	4,608.9	21.8
Major public service programs[3]	1,292.7	7.0	1,500.9	7.1
Auxiliary enterprises	2,544.2	13.7	2,775.1	13.1
Student aid expenditures[4]	823.2	4.4	993.6	4.7

[1] Does not include recovery of indirect costs. They are included in "other."
[2] Includes endowment income.
[3] Includes Federally Funded Research and Development Centers (expenditures $757.4 in 1969-70) and public service hospitals (expenditures $619.6 in 1969-70).
[4] For scholarships, fellowships, and prizes.
[5] Includes extension and public services ($530.5 million and 2.5 percent) and other sponsored programs ($779.4 million and 3.7 percent in 1969-70).
Source: Office of Education.

Table 38 NUMBER OF INSTITUTIONS OF HIGHER EDUCATION AND INSTITUTIONS BY HIGHEST DEGREE AWARDED IN SCIENCE AND ENGINEERING, 1961-1962 TO 1971-1972

Year	All institutions	4-year institutions					2-year institutions
		All 4-year	Granting science or engineering degrees				
			All levels	Bachelor's and 1st professional	Master's	Doctor's	
1961-62	2,050	1,464	1,112	745	212	155	586
1962-63	2,106	1,476	1,125	754	209	162	630
1963-64	2,146	1,509	1,147	757	218	172	637
1964-65	2,189	1,532	1,165	754	233	178	657
1965-66	2,247	1,565	1,178	745	246	187	682
1966-67	2,347	1,592	1,217	752	271	194	755
1967-68	2,392	1,603	1,223	746	281	196	789
1968-69	2,503	1,636	1,254	756	292	206	867
1969-70	2,544	1,654	1,279	764	295	220	890
1970-71	2,573	1,681	(NA)	—	—	229	892
1971-72	2,626	1,689	(NA)	—	—	—	937

NA—Not available.
Source: Office of Education and NSF.

Table 39 FALL ENROLLMENT IN EDUCATIONAL INSTITUTIONS, BY LEVEL, SELECTED YEARS 1960 TO 1971

Year (Fall)	Elementary	Secondary	Higher Education (degree-credit enrollment)								
			Total			Undergraduate			Graduate		
			Total	Full-time	Part-time	Total	Full-time	Part-time	Total	Full-time	Part-time
			Number (Thousands)								
1960	29,150	13,031	3,583	2,466	1,117	3,227	2,323	904	356	143	213
1965	31,570	16,904	5,526	3,911	1,615	4,907	3,654	1,253	619	258	363
1966	32,005	17,334	5,928	4,232	1,696	5,247	3,940	1,306	682	285	397
1967	31,972	17,919	6,406	4,556	1,850	5,653	4,239	1,414	753	317	436
1968	31,763	18,981	6,929	4,937	1,991	6,101	4,606	1,496	797	342	455
1969	31,655	19,463	7,484	5,259	2,230	6,656	4,890	1,766	829	364	464
1970	31,601	19,708	7,920	5,489	2,431	7,020	5,110	1,910	900	379	521
1971	31,589	19,693	8,126	5,677	2,448	7,217	5,289	1,928	908	388	520
			Average Annual Percent Change								
1960 to 1965	1.6	5.3	9.1	9.7	7.7	8.7	9.5	6.7	11.7	12.3	11.3
1965 to 1970	[1]	3.1	7.5	7.0	8.5	7.4	6.9	8.8	7.8	8.2	7.5
1970 to 1971	[1]	.1	2.6	3.4	.7	2.8	3.5	.9	.9	2.4	-.2

[1] Less than 1/10 of 1 percent.

Source: Office of Education (includes data provided in advance of publication).

Note: Data are for the 50 States and District of Columbia; excludes outlying areas.

Table 40 POPULATION OF 17-YEAR-OLDS, HIGH SCHOOL GRADUATES, COLLEGE ENTRANTS, BACHELOR'S DEGREES, AND FIRST-YEAR GRADUATE STUDENTS (TOTAL AND IN SCIENCE AND ENGINEERING) AND RATIOS, SELECTED YEARS 1949-1950 TO 1970-1971

Year		17-year-olds[1]	High school graduates	College entrants[2]	Bachelor's degrees[3]		First-year graduate students[4]	
					All fields	Science and engineering	All fields	Science and engineering
1949-50	Number (000)	2,185	1,200	512	292	82	NA	NA
	(Per 100 17-year-olds)	(100)	(55)	(23)	(13)	(4)	(NA)	(NA)
1959-60	Number (000)	2,773	1,864	923	502	153	318	97
	(Per 100 17-year-olds)	(100)	(67)	(33)	(18)	(6)	(11)	(4)
1965-66	Number (000)	3,516	2,672	1,378	833	264	526	132
	(Per 100 17-year-olds)	(100)	(76)	(39)	(24)	(8)	(15)	(4)
1966-67	Number (000)	3,517	2,680	1,439	884	271	NA	NA
	(Per 100 17-year-olds)	(100)	(76)	(41)	(25)	(8)	(NA)	(NA)
1967-68	Number (000)	3,571	2,702	1,630	NA	NA	NA	NA
	(Per 100 17-year-olds)	(100)	(76)	(46)	(NA)	(NA)	(NA)	(NA)
1968-69	Number (000)	3,675	2,839	1,749	NA	NA	NA	NA
	(Per 100 17-year-olds)	(100)	(77)	(48)	(NA)	(NA)	(NA)	(NA)
1969-70	Number (000)	3,820	2,906	1,780	NA	NA	NA	NA
	(Per 100 17-year-olds)	(100)	(76)	(48)	(NA)	(NA)	(NA)	(NA)
1970-71	Number (000)	3,925	3,036	NA	NA	NA	NA	NA
	(Per 100 17-year-olds)	(100)	(77)	(NA)	(NA)	(NA)	(NA)	(NA)

[1] Age as of 1 October before high school graduation.
[2] In fall following high school graduation.
[3] In spring four years after the reported year.
[4] In fall four years after the reported year.
Source: Office of Education and NSF.
Note: Data for the first three columns is for United States only—excludes outlying areas.

Table 41 **PERCENT OF FULL-TIME FRESHMEN ENTERING COLLEGE EXPECTING TO MAJOR IN A SCIENCE OR ENGINEERING FIELD, BY SEX AND TYPE OF INSTITUTION, FALL 1966 AND FALL 1971**

Probable major	Total		Men		Women		2-year colleges		4-year colleges		Universities	
	1966	1971	1966	1971	1966	1971	1966	1971	1966	1971	1966	1971
Total, all fields	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Total, science and engineering fields	33.6	32.4	43.7	41.6	21.8	22.2	31.6	31.7	33.5	31.0	35.9	36.5
Physical sciences	2.3	2.0	3.0	2.1	1.2	.8	1.8	1.0	3.6	2.3	4.0	3.3
Engineering	9.8	7.2	17.9	13.2	.2	.3	11.2	8.2	7.2	5.4	12.7	8.5
Mathematics and statistics	4.5	2.7	4.6	2.6	4.5	2.9	1.9	1.3	6.0	3.6	4.5	3.8
Life sciences[1]	9.6	8.8	7.6	9.8	3.7	3.4	5.2	7.5	9.8	5.5	6.0	7.8
Social sciences	8.2	8.6	5.2	5.6	11.7	12.2	7.3	6.2	9.3	10.8	7.3	9.2
Other technical fields[2]	2.2	5.1	3.4	7.3	.9	2.6	4.2	7.5	1.9	3.4	1.4	3.9
Health professions[3]	5.3	8.5	1.5	2.6	9.8	16.1	7.1	10.6	3.7	7.6	6.4	7.9
All other fields[4]	61.1	59.0	54.9	55.8	68.4	61.7	61.3	57.7	62.8	61.4	57.7	55.6

[1] Includes agriculture, forestry, and biological sciences.
[2] Includes computer science, electronics, industrial arts, and other technical fields.
[3] Includes health technology, nursing, pharmacy, and therapy; excludes premedical.
[4] Includes arts and humanities, education, business, and prelaw.

Source: American Council on Education longitudinal research program.

Table 42 ENROLLMENT FOR ADVANCED DEGREES IN SCIENCE AND ENGINEERING BY FIELD OF SCIENCE AND ATTENDANCE STATUS, SELECTED YEARS 1960-1970

(Thousands)

Field	Fall 1960		Fall 1965		Fall 1969		Fall 1970		Percent change 1960 to 1970	
	Total	Full-Time	Total	Full-Time	Total	Full-Time	Total	Full-Time	Total	Full-Time
All fields	214.3	124.7	535.3	230.9	706.9	361.0	816.2	373.0	7.8	9.4
Total, science and engineering	120.6	61.8	195.3	109.2	243.7	143.9	252.2	149.3	3.5	3.8
Agriculture and forestry	4.4	2.9	6.4	4.3	8.2	5.9	8.7	6.1	5.7	3.5
Biological sciences[1]	15.3	9.8	20.3	10.8	30.0	25.2	27.6	25.7	4.4	2.1
Engineering	35.6	14.7	57.5	24.9	65.0	29.9	64.8	31.6	0.4	5.5
Mathematical sciences[2]	11.8	5.1	21.0	10.1	29.2	14.0	30.6	15.2	4.9	8.2
Physical sciences	25.7	15.0	35.5	23.6	39.9	27.7	40.1	27.6	.6	.3
Psychology	10.7	5.2	15.6	9.3	22.7	14.2	25.3	15.4	11.5	7.9
Other social sciences[3]	16.1	9.0	30.0	16.1	42.7	26.9	45.0	27.6	5.6	2.7
Health fields	5.8	4.3	6.9	6.8	12.6	10.0	14.2	11.3	13.4	13.3
All other fields	187.9	58.6	331.1	114.9	500.6	187.1	549.8	212.5	9.8	13.5

[1] Includes sciences, general program.
[2] Includes mathematics, statistics, and computer sciences (fall 1965 and later).
[3] Includes anthropology, economics, agricultural economics, sociology, linguistics, political science, and geography.
Source: Office of Education (latest available data).

Table 43. EARNED DEGREES IN SCIENCE AND ENGINEERING, BY FIELDS OF SCIENCE AND LEVEL, 1960-61, 1970-71, AND AVERAGE ANNUAL INCREASE

[illegible]

Table 44 EMPLOYMENT OF NATURAL SCIENTISTS[1] AND ENGINEERS, ALL ACTIVITIES, AND RESEARCH AND DEVELOPMENT, SELECTED YEARS[2] 1955-1970

(Thousands)

	1955	1960	1962	1964	1966	1968	1970
All activities							
Total	**812.6**	**1,104.0**	**1,210.3**	**1,327.0**	**1,417.5**	**1,525.0**	**1,594.7**
Industry	610.1	812.0	878.3	946.6	1,004.2	1,089.8	1,111.2
Federal Government	85.1	97.7	110.6	126.4	134.2	145.4	150.4
State and local government	54.2	70.6	78.0	80.6	84.3	86.5	88.5
Universities and colleges	61.2	114.8	130.9	158.2	178.1	205.8	228.2
Nonprofit organizations	5.6	8.7	12.5	15.2	16.7	17.6	16.4
Research and development							
Total	**248.8**	**366.1**	**441.9**	**[illegible]**	**526.3**	**552.8**	**535.4**
Industry	180.4	282.1	318.8	351.1	369.9	386.5	372.2
Federal Government	27.6	44.7	53.1	76.2	72.3	72.4	69.6
State and local government	2.3	3.4	4.2	4.2	4.5	4.0	4.2
Universities and colleges	33.8	48.6	55.2	62.5	65.6	75.3	76.7
Nonprofit organizations	4.7	7.3	10.6	12.9	14.0	14.6	13.7

[1] Excludes social scientists.
[2] As of January.
Source: Bureau of Labor Statistics.

Table 45 NATURAL SCIENTISTS AND ENGINEERS IN PRIVATE INDUSTRY, BY MAJOR INDUSTRY GROUP; AND NUMBER ENGAGED IN RESEARCH AND DEVELOPMENT, JANUARY 1970

(Thousands)

Industry	All scientists and engineers			R&D scientists and engineers[1]
	Total	Scientists	Engineers	
All industries—total	**1,074.1**	**217.4**	**856.7**	**374.6**
Manufacturing	757.6	182.8	594.8	297.6
Ordnance	52.5	7.1	45.4	23.7
Primary metals	29.8	10.2	19.6	4.5
Fabricated metals	30.2	2.8	27.6	9.4
Machinery	94.1	9.0	85.1	31.6
Electrical equipment	163.4	14.4	149.0	77.7
Motor vehicles	33.9	3.4	30.5	9.9
Aircraft	91.7	7.9	83.8	49.5
Instruments	37.5	6.0	31.5	14.9
Chemicals	107.3	60.9	46.4	44.9
Petroleum, including extraction	37.9	17.0	20.9	6.0
Rubber	15.1	4.1	11.0	3.7
Other manufacturing	64.2	20.2	44.0	19.8
Nonmanufacturing	316.5	34.6	281.9	77.0
Mining	7.8	1.7	6.1	.9
Construction	51.3	1.0	50.3	4.7
Transportation	8.9	1.2	7.7	1.0
Communications	19.3	.3	19.0	1.3
Public utilities	30.1	1.4	28.7	1.6
Commercial laboratories	75.2	26.9	48.3	50.7
Medical and dental laboratories	2.0	2.0	—[2]	.4
Engineering and architectural services	80.1	5.2	74.9	10.8
Other nonmanufacturing	41.8	14.9	26.9	5.6

[1] Includes management and administration of R&D.
[2] Less than 50.
Source: Bureau of Labor Statistics.

Table 46 SCIENTISTS, ENGINEERS, AND PHYSICIANS ADMITTED TO THE UNITED STATES AS IMMIGRANTS, FISCAL YEARS 1960-1971

Fiscal year	Scientists and engineers				Physicians and surgeons
	Total	Engineers	Natural scientists	Social scientists	
1960	4,550	3,354	1,043	153	1,574
1961	4,171	2,890	1,102	179	1,683
1962	4,297	2,940	1,185	192	1,797
1963	5,933	4,014	1,688	231	2,093
1964	5,762	3,735	1,764	263	2,340
1965	5,346	2,449	1,597	302	2,012
1966	7,205	4,915	1,949	341	2,549
1967	12,523	8,821	3,158	544	3,325
1968	12,973	9,313	3,110	550	3,060
1969	10,268	7,190	2,691	604	2,756
1970	13,337	9,306	3,784	748	3,155
1971	13,102	9,015	3,456	631	3,749

Source: Immigration and Naturalization Service.